

**Virginia Tech and Virginia State University
Agricultural Research and Extension
FY 2005-06 Plan of Work Update**

The following is the Virginia Plan of Work Update for 2005-06. It includes the Agricultural Research and Extension programs at Virginia Tech and Virginia State University.

<p>Dr. Judith H. Jones 1862 Interim Extension Director and Associate Dean, College of Agriculture and Life Sciences 101 Hutcheson Hall Blacksburg, VA 24061</p>	<p>Dr. Lorenza W. Lyons Administrator, Cooperative Extension, 1890 Programs and Dean, School of Agriculture, Science and Technology 308 Cooperative Extension Building Box 9081 Virginia State University Petersburg, VA 23806</p>
<p>Dr. Gerald L. Jubb, Jr. 1862 Associate Director, Virginia Agricultural Experiment Station and Assistant Dean for Research, College of Agriculture and Life Sciences 104C Hutcheson Hall Virginia Tech Blacksburg, VA 24061</p>	<p>Dr. Winfrey S. Clarke 1890 Associate Dean/Director of Research Box 9061 Virginia State University Petersburg, VA 23806</p>

Introduction

Virginia's AREERA Plan of Work Update for 2005-06 is a continuation of the 2000-04 Plan of Work, with no changes.

The Plan of Work for Virginia consists of one consolidated plan covering both research and Extension programs and both the 1862 (Virginia Tech) and the 1890 (Virginia State) institutions. This total submission of Virginia's AREERA Plan of Work includes all state appropriated and federal formula funds. Extension and research were combined into one agency at Virginia Tech by the Virginia General Assembly in 1994 and were combined at Virginia State University by action of the Virginia General Assembly in 1999. Virginia Tech and Virginia State have been operating as one Extension service since 1964. Research at both institutions has been conducted in a cooperative manner for many years.

The table below illustrates the national goals for which programs in Extension and research at both universities are planned and conducted. The 1890 university does not participate in Goal 2 nor in the research programs for Goals 3 and 5. The 1862 partner participates in all five goals.

	Goal 1	Goal 2	Goal 3	Goal 4	Goal 5
1862 AES	X	X	X	X	X
1862 CES	X	X	X	X	X
1890 AES	X			X	
1890 CES	X		X	X	X

1862/1890 Relationship

From 1890 until 1964, Cooperative Extension in Virginia was divided along racial lines. The 1890 Extension program was first placed at Hampton Institute, but, in 1920, the 1890 designation was moved to Virginia State University. The 1890 program served African-American Virginians through an agent and specialist staff at the historically black university. The 1862 program served white Virginians through an agent and specialist staff housed at Virginia Tech.

When the Civil Rights Act of 1964 was passed, Virginia Cooperative Extension combined the previously segregated field staff and programs at the two universities into a single system. Virginia Tech payrolls all Extension agents; however, specialists, administrators, and support staff are payrolled by each home university. Virginia Tech handles federal benefits for eligible employees at both universities, Virginia Tech provides the federal penalty mail allocations to Virginia State, Virginia State provides office space on its campus for one of the six Extension district directors and staff, and Virginia State has been included in the Virginia Tech information technology initiatives including access to its computer network since its inception. Both institutions jointly plan and report on programs for the state and federal partners.

Virginia Cooperative Extension (VCE) continues as a joint program of both universities, which have a memorandum of understanding outlining their working relationship. The two institutions work cooperatively on educational programs and avoid duplicating each other's work. State and

federal funds are appropriated directly to each university. Since Virginia State, by agreement, has no resident Extension agent staff, local government funds to support agents' work are paid to Virginia Tech. Virginia State does have paraprofessionals in several localities throughout the Commonwealth. Specialists at both universities work cooperatively on educational programs, and researchers support each other's efforts to conduct relevant research which is non-duplicative.

As part of the joint Extension program, both the Director of VCE at Virginia Tech and the Administrator of VCE at Virginia State give leadership to Virginia Cooperative Extension. The administrative leadership groups at both universities meet jointly on a regularly scheduled basis to conduct the business of the organization. The 1862 and 1890 Directors of the Agricultural Experiment Stations meet and talk on a frequent basis to coordinate research efforts.

National Goals

Goal 1: To achieve an agricultural production system that is highly competitive in the global economy

Today in Virginia, agriculture is an industry that employs one-sixth of the work force and generates one-sixth of the state's economic activity. Agriculture is a \$35 billion industry. Forestry related activities add another \$11.5 billion to Virginia's economy, and employ an additional 225,000 people. Although agriculture's past accomplishments are enviable, breakthroughs in biotechnology and information technology will combine to produce even greater agricultural productivity with reduced resource inputs. Advances in information technology will increase educational efficiency, the potential for global marketing of value-added agricultural products, and the ability to recruit and educate future scientists, professionals and leaders.

Over 70% of the farmers in Virginia have annual gross farm sales of less than \$20,000. A typical Virginia farmer works 40 hours a week at an off-farm job. Small and part-time farmers need enterprises that generate high income from small acreage and/or small herds or flocks. Traditional crop and livestock enterprises generally require large volume production to earn profits. Specific efforts must continue to be made to provide education to hard-to-reach audiences. These audiences may not have a formal education, reliable transportation, or be able to afford high initial investment costs. They may need a focused individual attention to succeed at a new farm enterprise.

Aquaculture is another rapidly expanding form of Agriculture in the nation, and is projected to be a major global market-driven growth industry in the future. The Virginia Aquaculture Industry has grown from less than \$1 million in revenues in 1980 to more than \$20 million in sales of cultured marine and freshwater aquatic species in 1995, and production is increasing. Aquaculture has been identified as a state initiative by the Virginia General Assembly and the Governor, and it is a program area continuing to receive new funding. The success of the Virginia aquaculture industry is the result of increasing consumer demand for a healthy, affordable, and contaminant-free food fish product.

Meat goat production is a new and attractive livestock enterprise for Virginia producers. The number of meat-type goats in Virginia has increased 450% over the last 14 years with more than 9,000 head. The number of Virginia farms with goats has risen from 297 in 1978 to 1,096 in 1992; a 270% increase. According to the state statistician, meat goat numbers have increased dramatically since 1992 as will be validated by the goat census to be conducted at the end of 1997. This shows Virginia farmers' increasing interest in goat production.

To achieve agriculture and forestry production systems that are highly competitive nationally and internationally, Virginia must produce commodities and specialty products that: (1) have high level of demand on global markets, (2) are safe to humans and the environment, (3) are produced with minimum impact on the environment, and (4) are well promoted and attractively priced. The two institutions achieve these goals through programs of research, extension, and teaching.

Overall, the main program thrusts in agricultural production systems programs at Virginia Tech and Virginia State are (1) production, processing, and marketing efficiency, (2) quality and uniqueness of Virginia products, (3) profitability and competitiveness for Virginia agriculture and forestry enterprises, (4) protecting soil and water, both their abundance and quality, and (5) social and structural well-being of families and communities.

Goal 2: To provide a safe and secure food and fiber system

While the American food supply is among the safest in the world, there are still millions (estimated twelve to twenty-one million) of Americans stricken by foodborne illness every year, and some 9,000 people a year die as a result (mostly the very young and elderly). The threats are many, ranging from *Escherichia coli* (E. coli) O157:H7 in meat and apple juice, to *Salmonella* in eggs, on chicken, in dairy products, and on produce, to *Cyclospora* and *Cryptosporidium* on fruit and in fruit juices, to hepatitis A virus in frozen strawberries. According to the Centers for Disease Control (CDC) Five Year Summary of Foodborne Disease Outbreaks 1988-1992, the foodservice industry is the largest single source of reported foodborne illness outbreaks with 44%, followed by a distant second of food prepared at home (23%). The leading cause of foodborne illness is the mishandling of foods, allowing bacterial growth.

The area of food safety is so important that the Clinton administration has proposed an ambitious, \$43-million Food Safety Initiative designed to strengthen and improve food safety practices and policies. The initiative includes expanded education efforts aimed at consumers, food service workers, and various other segments of the food community; enhanced food safety inspection and monitoring efforts; and an increase in research to develop new and more rapid detection methods and preventive techniques to increase food safety. The Department of Health and Human Services (FDA), the U.S. Department of Agriculture, and the Environmental Protection Agency prepared the report, "Food Safety From Farm To Table," which outlines recommendations on improving U.S. food safety. The centerpiece of the inspections segment of the initiative revolves around the HACCP (Hazard Analysis Critical Control Point) concept, a science-based preventive approach to safe food production. To improve food safety, issues must be addressed from "farm to table."

Goal 3: To achieve a healthier, more well-nourished population

The growing cost of health care and the loss in human potential that results from unhealthy lifestyle practices and inadequate preventive health behaviors is receiving increased attention from both government planners and health professionals. Desired lifestyle practices including a prudent diet providing optimum amounts of wholesome and nutritious food, regular physical activity, avoidance of smoking and other addictive substances, and responsible use of alcohol significantly reduce the risk of chronic disease and premature death. In children lifestyle patterns that promote health support optimum growth and attainment of individual learning potential. The Virginia Department of Health (Comprehensive Prevention Plan) estimated if only 10% of Virginians changed their health behaviors in the areas of body weight, exercise, high blood pressure, smoking, or alcohol abuse, approximately 1400 fewer people would die each year, productivity would increase by \$40 million and tax revenue by \$1.7 million. On a national basis more than 13% of the Gross National Product or \$2864 per person is spent on health care and these numbers are increasing. The projected increase in the elderly population provides further impetus for health education addressing positive health practices and accessibility to preventive health care that can delay the onset and progression of degenerative diseases.

Although most Virginians have more than adequate amounts of food available to them, there is need to address the issue of improper diets. Current nutritional challenges include the prevalence of obesity, dietary excesses of fat, saturated fat, cholesterol, and sodium, and inadequate intakes of fiber and particular vitamins and minerals. Such dietary imbalances contribute to the development of heart disease, cancer, and stroke, responsible for more than 32,000 deaths in 1994 (the most recent year for which statistics are available) or 62% of all Virginia deaths. It is estimated that treatment for heart disease and cancer averages \$27,000 per person or over \$880 million per year statewide.

The risk of chronic diseases such as heart disease, cancer, and osteoporosis, which lead to disability and a degraded quality of life, can be reduced or ameliorated through appropriate diet and exercise patterns that should be initiated in childhood. In 1994, 56% of Virginians did not exercise, 24% were overweight, 22% had high blood cholesterol, 22% had high blood pressure, 23% smoked, and 15% abused alcohol. The major priority for Virginia Extension educators over the next five years will be to deliver educational programs that can lead to the reduction of chronic disease risk among all age groups. The building of collaborative relationships and linkages with Virginia community agencies and with nutrition experts and researchers in Virginia institutions of higher learning will facilitate both the development of appropriate subject matter curriculum and its delivery to targeted audiences.

Goal 4: To achieve greater harmony between agriculture and the environment

Farms have enlarged significantly and agriculture and forestry have become more intensive. Soil erosion and sedimentation continue to be a major source of concern. In addition, nutrients and other chemicals used in agricultural and forestry operations are contaminating surface and ground water supplies to unacceptable levels. Studies have shown nonpoint sources (NPS) are responsible for a majority of water pollution problems. As agriculture has become intensive and production increased, society has become concerned about air and water quality. Scientists

supporting food and fiber production must now develop new approaches to combat the associated pollution problems. Agricultural and forestry production practices must achieve greater harmony with the environment. Making use of cutting edge technologies, scientists at Virginia Tech and Virginia State will develop best management practices (BMPs) to control nutrients and sedimentation in runoff and improve the productivity of estuaries. They must also develop new procedures for managing and utilizing the wastes from production and processing of food and fiber to improve the quality of surface and ground water supplies.

The 4-H Marine/Aquatic Education Program (at Virginia State) and the Virginia 4-H Environmental Education and Natural Resources Curriculum Component Committee recognize that growing population and consumer demands are placing an unprecedented stress on our natural resources. Demands for food, wood products, consumer products and land for commercial and residential development are forcing producers and consumers to look for new programs, technologies, and practices that will sustain natural resource supplies for the future. There is a pressing need to educate and train producers and consumers in effective, best management practices aimed at natural resource sustainability. Producers must balance economic viability with resource conservation and protection. Consumers must balance consumption and life-style habits with environmental stewardship commitment. The over-riding need to protect and conserve natural resources to insure good environmental quality must be incorporated in education and training programs for both producers and consumers.

Goal 5: To enhance economic opportunities and the quality of life among families and communities

Communities throughout Virginia are experiencing serious economic problems. Contributing to these problems in certain communities is the high unemployment rate--a double-digit figure for a number of localities. Per capita income in Virginia, which on average is \$20,046, ranges from a low of \$11,715 in Lee County to a high of \$32,409 in Alexandria, according to 1991 statistics. Approximately 10% of the total population have incomes below the poverty level. Localities differ considerably in the percentage of families in poverty, ranging from a high of 32% in one locality to a low of 3% in another. In 1992, twenty-three percent of children in Virginia were in families with incomes below 150% of the poverty level, and 13% of children had no health insurance. Twenty-two percent of Virginia's children are in families headed by a single parent, usually the female parent. Since the mean taxable wage of females (\$20,752) is considerably below that of males (\$34,356), economic conditions for children in single female parent homes are even more severe.

Although our nation and the Commonwealth continue to experience a time of economic growth, many families and individuals are facing difficult economic times personally. Layoffs and business restructuring continue across the State. Many people who lose jobs find replacement jobs that are lower paying positions with reduced benefits, creating additional financial stress and difficulty in meeting obligations. Bankruptcy rates have soared in recent years and, in 1996 reached an all-time high, especially in Southwest Virginia. Most bankruptcy filings continue to be for liquidation rather than repayment. Thus, when a family faces bankruptcy, the resulting financial disaster affects the community as well as the individual family. Many forced off welfare rolls are struggling to make ends meet with minimum wage jobs and no benefits. Levels

of outstanding credit continue to grow. Micro- and Home-Based businesses are growing means to help families increase their income.

Housing remains the single largest asset of most citizens, thus proper maintenance and care of this asset is critical, including assuring safe air quality and water supply. Those who do not own housing need education to prepare for this responsibility. Thousands of Virginians have an imminent need to learn to comparison shop for and appropriately manage bank accounts. Citizens are increasingly responsible for financing their own retirements, but few have basic knowledge and skill in this area. Meanwhile, our marketplace relies increasingly on competition with options exploding, requiring increasing consumer attention and decisions. Research shows that education is needed to help micro and home business owners develop business management skills and that when employees have personal financial programs, they negatively affect the employer's bottom line. It also shows that the level of consumer knowledge in our society is frighteningly low. However, there is little consumer education offered in our school systems to prepare citizens for these challenges. Non-formal, community-based education is needed.

Many local government officials, both elected and appointed, volunteer and paid, do not have sufficient information or training to equip them with the knowledge and skills needed to perform their public service roles and responsibilities. This lack of information and training has a negative effect on their ability to make informed decisions related to fiscal and human resource management, strategic community economic development planning, and overall government operations. Finally, many community residents, both adults and youth, do not have the necessary information and knowledge base to participate effectively as informed citizens.

Virginia has 325 local governments (counties, cities and towns) approximately 1,800 elected officials, 220 top-level managers, 2,500 upper-level managers, and 20,000 citizens appointed to local government boards, committees and commissions. The turnover rate among elected officials is estimated to be 40% (650) every four years. Approximately 10% (2,000) new appointments are made annually to boards, committees and commissions. Most serve without the benefit of formal training or orientation for the positions that they hold. Because local governments are likely to face increasingly difficult challenges and changes due to the complexity of their operating environments, it will be more important than ever before for them to function effectively and efficiently. In addition to the high turnover rate, other challenges to be faced include changes in: economic conditions; federal, state and local relationships; federal and state mandates; population distribution; technology; public expectations; land settlement patterns; demands for services; and many other critical issues.

Many communities are having difficulty maintaining infrastructure and an able leadership base to accommodate citizens' needs. Community leaders lack knowledge, skills and experience in long range planning, collaborative decision-making and the development of partnerships for sustainability. They have great difficulty in knowing what kind of analytical information they require for decision making, and how to interpret information when they do get it.

Local and regional community leaders, planners, business leaders, economic developers and entrepreneurs in Virginia communities have looked to Virginia Cooperative Extension (VCE) to provide information, education and technical assistance and linkages for economic and business

development, and leadership development and training. Throughout the Commonwealth, VCE is strategically poised to continue addressing economic development needs and to provide analysis of community economic problems in a changing environment. Therefore, VCE develops and delivers research-based information, training and technical assistance, that contributes directly to local and state officials understanding and management of economic development activities and effective operation and management of communities throughout the Commonwealth.

4-H is the comprehensive youth development program of Virginia Cooperative Extension. Youth between the ages of 5 and 18 engage in hands-on learning experiences under the guidance of adult or teen 4-H volunteers trained by 4-H agents. 4-H programs use experiential learning opportunities to teach the latest research based subject matter knowledge and to foster skill development in effective citizenship, leadership, and other life skills. The ten areas of 4-H curriculum focus are: Animal sciences; Communications and Expressive Arts; Environmental Education and Natural Resources; Jobs, Careers and Economics; Plant and Soil Sciences; Citizenship; Consumer and Family Sciences; Health, Nutrition and Wellness; Leadership and Personal Development; and Science and Technology. Youth also participate in educational experiences at six 4-H educational centers. 4-H has both a school based delivery model and a community based delivery model so maximum access to Virginia's youth is provided. The specific learning experiences a 4-H member participates in are shaped locally and supported at the state and national levels. 4-H members learn how to: make decisions, manage resources, work with others, and utilize effective communication skills. 4-H serves as an effective prevention educational program. Involvement in 4-H reduces the potential for dysfunctional behavior in the community by youth.

The following data compiled by the Virginia Commission on Youth in July, 1994, illustrate the potential savings as a result of prevention, and current costs are even higher. For example, a 10-week parenting class can be taught for approximately \$15, while a one-week stay in a runaway shelter costs \$60. Annual foster care maintenance costs for one child are calculated at \$3,845, while \$723 would purchase intensive in-home services for an at-risk child. Family preservation services can be purchased for about \$3,000 per family, but it costs about \$16,000 to support a child in residential care for a year. Taxpayers spend about \$37,000 per child in annual learning center placements, while \$6,000 would serve one family in a court diversion program. According to the latest results of the Perry Preschool Study, for every \$1 spent in quality early childhood programs, \$7 is realized in future savings due to reduced need for special education services, reduced dependence on welfare, increased economic productivity and decreased crime and incarceration.

To improve prospects for sound youth development, young people need to be involved in local 4-H educational programs. Such 4-H programs focus on providing participants with positive adult and teen role models and engaging them in the 4-H learning model. Using the 4-H process of goal setting, cognition, practice and performance, youth develop the crucial life skills that enable them to avoid dysfunctional outcomes.

For Virginia's working families, the issue of adequate child care must also be confronted, and the growing need for adult day care for aging parents compounds the problem. The demand for caregiving resources for children and adults far exceeds the number of available slots. The

impact of divorce has consequences for parenting and grandparenting, as well as for extended family and community relationships. The increasing incidence of family violence is well documented and illustrates the need for prevention education.

Virginia's families are confronted with a multitude of issues and problems that impact their ability to succeed economically and enhance family well-being. Some of these concerns are reflected in the statistics below.

- The rate of victims of child abuse and neglect increased eight percent from 1991 to 1996 (Statistical Report of Virginia's Child Protective Services Program 1991-1996, Virginia Department of Social Services)
- Births by Virginia's girls aged 15-17 in 1995 remained high with a rate of 33.6 per 1,000 (Virginia KIDS COUNT, 1996).
- The incidents of students possessing alcohol or drugs in school increased 43.0 percent from 1991-1995 (Virginia KIDS COUNT, 1996)
- The Juvenile arrest rate for violent crime increased 21.9 percent from 1991-1995 (Virginia KIDS COUNT, 1996).
- Although Virginia had an increase in the number of licensed day care providers of 8 percent in 1996 (Virginia KIDS COUNT, 1996) the quality and affordability of child care still remain issues.
- By the year 2030, there will be 65 million persons 65 years of age and older, 35 million more persons than there were in 1990 (Bouvier & De Vita, 1991).
- A three-year average from 1994-96 indicates that 11.1 percent of Virginia's population lives below the poverty line (<http://www.census.gov/hhes/poverty/poverty96/pv96state.html>)
- Families below poverty spend 21.1 percent of their income on child care
- (<http://www.census.gov/population/socdemo/child/cctab2.txt>).

Concerns about how Virginia's families are functioning, adjusting, and adapting to these problems have economic impacts for the individual family and the Commonwealth as a whole. Poor adjustment in children and youth is linked to negative outcomes in adulthood. Therefore, improving parenting skills and increasing the number and quality of affordable child care providers and centers is essential to family and child well-being, particularly for limited resource families. Reducing at risk behaviors for youth while at the same time promoting resiliency in children, youth, and families is essential in reducing financial and emotional costs to families and communities. The graying of our population will dramatically alter our society, and the Cooperative Extension System's Aging in America Task Force (Aging in America, 1993) recognizes this challenge by identifying broad issues and trends: economic, community services, family, health, continuing education and leadership development, housing and living arrangements, and public policy.

Improving the family's ability to function across the life span is a key ingredient to improving the standard of living and quality of life for Virginia's families. Research (Miller, Bishop, Epstein, Keitner, 1985,) indicates that families who function well are able to problem solve, communicate well, define family roles and boundaries, promote acceptable family behavior, and respond appropriately emotionally. Therefore, educating families about healthy versus unhealthy family functioning is essential in improving overall family health and well-being.

The business community also has a stake in how well families are functioning, since employee absenteeism due to family related issues and/or problems can result in a less productive employee. Family issues such as lack of or poor quality child care, dealing with an aging family member, illnesses, domestic/family violence, and youth brushes with the law enforcement system take time and energy away from productivity. To respond to the diverse needs of Virginia's families, Virginia Cooperative Extension addresses critical needs and provides educational programming that enables Virginia's families to meet the challenges before them.

VCE's goal is to improve family functioning throughout the life cycle by collaborative, integrative, educational programming in the areas of parenting, child development, child care, youth development, aging, and community development.